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### **REMARKS**

This amendment is responsive to the Office Action of September 4, 2007. Reconsideration and allowance of claims 1-10, 12-19, 21-27, 30-40, 42-50, 52-58, 61-64, and 66-72 are requested.

### **The Office Action**

Claims 1-5, 9-14, 17-20, 32-35, 40-45, 48, 51, 66, 67, 70, and 73 stand rejected under 35 U.S.C. § 102 as being anticipated by Cosman (US 6,405,072).

Claims 6, 7, 15, 16, 36-38, 46, and 47 stand rejected under 35 U.S.C. § 103 as being unpatentable over Cosman in view of Taylor (US 5,950,629).

Claims 8 and 39 stand rejected under 35 U.S.C. § 103 as being unpatentable over Cosman in view of Taylor, further in view of Sumanaweera (US 6,443,894).

Claims 21, 22, 25-31, 49, 50, 52-54, 57-64, 68, 71, and 72 stand rejected under 35 U.S.C. § 103 as being unpatentable over Cosman in view of Wodicka (US 5,445,144).

Claims 23, 24, 55, 56, 65, and 69 stand rejected under 35 U.S.C. § 103 as being unpatentable over Cosman in view of Wodicka, further in view of Taylor.

### **The Present Amendment**

The independent claims have been amended to define the "object of interest" as including a haptic object that is defined by a mapping between at least one of (i) a pose of a surgical tool and an output wrench of a haptic device (this covers, among other things, impedance haptic devices which sense position and output force), and (ii) a wrench applied by a user to a haptic device and an output position of the haptic device (this covers, among other things, admittance devices which sense force and output position). Support for these amendments is found in the specification at paragraphs [0030], [0031], [0137], and [0143].

### **The References of Record**

**Cosman** is directed to a medical oncology device that irradiates a tumor or target with a beam of high energy radiation from a LINAC machine. A LINAC

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machine, of course, uses a beam of radiation to attack DNA/RNA of the irradiated cells in such a manner as to preferentially destroy the RNA or DNA of cancerous tumors. In Cosman, the radiation source moves along a fixed track to irradiate the tumor from a plurality of different angles. Irradiating a tumor from a plurality of different angles maximizes the radiation dose received by the tumor while limiting the radiation dose received by other tissue along the trajectories of the radiation beam. In Cosman, the treatment regimen is predetermined. There is no physical interaction between the radiologist and any hand-held surgical tool. Cosman makes no reference to haptics, haptic objects, or haptic feedback. Indeed, since there is no physical interaction between a person and a hand-held surgical tool, there is no apparent reason or motivation to add a haptic object or haptic feedback to Cosman. Not only is there no apparent reason or motivation to add a haptic object or haptic feedback to Cosman, but there is no enabling disclosure how one would do so or what result one would expect to achieve by doing so.

Taylor discloses a system 120 that includes a manipulator 10 for positioning a surgical instrument. The system 120 is capable of sensing the position of a surgical tool relative to a patient's anatomy, a surgical plan, a target area, or another surgical instrument (column 12, lines 33-54; column 17, lines 66-67) and providing audible signals based on a sensed occurrence (column 20, lines 48-60). Although Taylor discloses employing computer-controlled brakes to provide tactile feedback and additional damping to assist the surgeon in positioning the surgical instrument (column 8, lines 29-30), nothing in Taylor teaches or fairly suggests the use of a haptic object.

Sumanaweera does not cure the deficiencies of Cosman or Taylor. Sumanaweera discloses a medical diagnostic ultrasound system for three dimensional imaging. Sumanaweera does not discuss user-interactive computer assisted surgery and makes no references to haptics, haptic objects, or haptic feedback. Again, because Sumanaweera is merely an imaging system and not a surgical system, not only is there no motivation to incorporate haptics into the system, but is unclear how one could or would do so and what advantage, if any, would be achieved.

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**Wodicka** discloses a device for acoustically guiding an endo-tracheal tube 10 as it is inserted into a patient's body. Wodicka again fails to teach, suggest, or fairly disclose the use of haptics, a haptic object, or haptic feedback.

**The Claims Distinguish Patentably  
Over the References of Record**

The haptic object limitation found in many of the dependent claims has been incorporated into each of the independent claims and clarified. Cosman, the base or only reference applied against all of the claims, does not disclose and makes no suggestion of haptics or haptic objects. The secondary references cited by the Examiner do not provide any motivation to add haptics to Cosman, an enabling disclosure as to how to do so, or any apparent advantage that would be had from such a combination. Accordingly, it is submitted that all claims distinguish patentably and unobviously over the references of record.

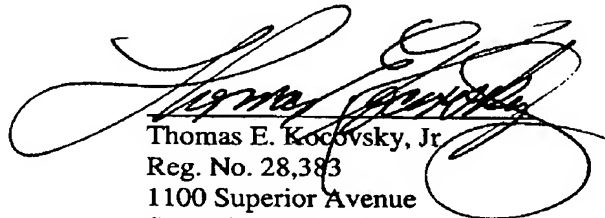
**CONCLUSION**

For the reasons set forth above, it is submitted that claims 1-10, 12-19, 21-27, 30-40, 42-50, 52-58, 61-64, and 66-72 are now in condition for allowance. An early allowance of all claims is requested.

In the event the Examiner considers personal contact advantageous to the disposition of this case, he is requested to telephone Thomas Kocovsky at (216) 861-5582.

Respectfully submitted,

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